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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,954	05/04/2007	Brady Reuben Davies	1-24871	4408

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EXAMINER	
VINH, LAN	
ART UNIT	PAPER NUMBER
1792	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/590,954	DAVIES, BRADY REUBEN	
	Examiner	Art Unit	
	LAN VINH	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 March 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12, 21-30, 36-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *36-38* is/are allowed.

6)☒ Claim(s) *1-5, 9-12, 21-23, 27-30* is/are rejected.

7)☒ Claim(s) *6-8 and 24-26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *063009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pages 9-13, filed 3/28/2009, with respect to the rejection(s) of claim(s) 1-3, 9-11 under 35 U.S.C 102(b) as being anticipated by Kurtz (349)/ the rejection(s) of claim(s) 1, 4-5, 6-8 under 35 U.S.C 102(b) as being anticipated by Neukermans (445)/ the rejection(s) of claim(s) 21, 22-23, 26-29 under 35 U.S.C 102(e) as being anticipated by Shinohara (718) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration and search, a new ground(s) of rejection of claims 1-5, 21 under 35 U.S.C 102 is made in view of newly cited references of Tadigadaba et al (US 20030061889) and Kruri-Yakub et al (US 6,958,255)

Applicant's arguments, see pages 12-13, with respect to the rejection of claims 36-37 under 35 U.S.C 102(e) as being anticipated by Shinohara have been fully considered and are persuasive. The rejection(s) has been withdrawn.

The applicants argue that to take the teaching of the cited section of Ting, which deals with a "process for passivation of [exposed dielectric layers and the bonding pads] of semiconductor devices to protect those devices from environmental moisture or contamination" (Ting, col. 3, lines 31 - 37) and suggest that there is any relevance to a process in which an internal coating is used between layers of a micromachined device to prevent bonding between portions of the layers would therefore seems to be without any legitimate motivation, since the use of hindsight to assemble elements of Applicants' claims from unrelated references is inappropriate. This argument is

unpersuasive because it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

The new ground of rejection(s) follows

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 9-10, 11 are rejected under 35 U.S.C. 102(a) as being anticipated by Tadigadaba et al (US 20030061889)

Tadigadaba discloses a method for forming a micromachine apparatus by bonding a plurality of layers of material. The method comprises: providing a first layer of material 800, providing a second layer of material 820, providing a coating 810 on a recessed portion/first portion of the first layer 800, fusion/direct bonding the first layer

and the second layer to each other to form a micromachined device, the coating 810 being effective to prevent the recessed coated portion/first coated portion from bonding with the second layer 820 (page 4, paragraphs 0055-0056; figs 8A-8C)

The limitations of claims 9-10 have been discussed above

Regarding claim 11, Tadigadaba discloses masking a side surface /second portion of the first layer 800 during dry etching wherein the side surface/second portion comprises an area of the first layer that is not to be coated by the coating (page 5, paragraph 0055; fig. 8A)

3. Claims 1, 4-5, 9-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Kruri-Yakub et al (US 6,958,255)

Kruri-Yakub discloses a method for fabricating a micromachine transducer. The method comprises: providing a first layer of material 11, providing a second layer of material 14/51, providing a coating 57 on a recessed portion/first portion of the first layer 11, fusion/direct bonding the first layer and the second layer to each other to form a micromachined device, the coating being effective to prevent the recessed coated portion/first coated portion from bonding with the second layer 14/51 (col 6, lines 35-65, ; fig. 5.4, fig 6)

Regarding claim 4, Kruri-Yakub discloses that the second layer has a plurality of silicon membranes 14/mechanical parts formed in, the mechanical parts being movable relative to a stationary portion of the second layer (fig. 6)

Regarding claim 5, Kruri-Yakub discloses that the coating 57 is provided on the first layer at a position that corresponds to the position of the silicon membranes 14/mechanical parts formed in the second layer, such that when the first layer is positioned adjacent the second layer, the coating portion is adjacent the mechanical parts (fig. 6)

The limitations of claims 9-10 have been discussed above

4. Claims 21, 27-28, 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Kruri-Yakub et al (US 6,958,255)

Kruri-Yakub discloses a method for fabricating a micromachine transducer. The method comprises: providing a plurality of layers of material, including at least a first layer 51 and a second layer 11, wherein the first layer includes a silicon membrane 14/movable microvalve portion that is movable relative to a stationary portion of the first layer, providing a coating 57 on a recessed portion/a portion of the second layer 11 (col 6, lines 35-65, ; fig. 5.4, fig 6)

positioning the coated portion of the second layer adjacent to the silicon membrane 14/movable microvalve portion of the first layer (fig. 6)

performing a fusion/bonding operation to bond the plurality of layers (first and second layer) together, wherein the coating 57 prevents the silicon membrane 14/ movable microvalve portion of the first layer from bonding with the recessed coated portion of the second layer while a side surface /an uncoated portion of the second layer 11 bonds to the stationary portion of the first layer 51 (col 6, lines 45-55; fig. 6)

The limitations of claims 27-28 have been discussed above

Regarding claim 29, Kruri-Yakub masking a side surface/second portion of the second layer 11 wherein the second portion comprises an area of the second layer that is not to be coated by the coating when the coating is applied to the rest of the second layer (fig. 4.1).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-3, 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kruri-Yakub et al (US 6,958,255) in view of Cohn et al (US 2002/0096421)

Kruri-Yakub method has been described above. Unlike the instant claimed inventions as per claims 2-3, 22-23, Kruri-Yakub discloses that the coating material is silicon oxide instead of silicon nitride

Cohn, in a method for manufacturing MEMS device, discloses that silicon oxide or silicon nitride can be used as insulating coating on a substrate of a MEMS device (page 4, paragraph 0052)

One skilled in the art at the time the invention was made would have found it obvious to modify Kruri-Yakub method by using a coating of silicon nitride as per Cohn since

Cohn discloses that a contiguous dielectric layer (i.e. silicon nitride) was often used as an isolation layer between elements of a MEMS device (page 6, paragraph 0072)

6. Claims 12, 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kruri-Yakub et al (US 6,958,255) in view of Ting (US 5,856,705)

Kruri-Yakub method has been described above. Unlike the instant claimed inventions as per claims 12, 30, Kruri-Yakub fails to disclose that the coating is applied with a thickness of 10 Angstroms to 100 micrometers.

Ting discloses a process for forming a sealed chip comprises a step of forming a coating having a thickness of 500 angstroms (col 4, lines 1-5)

One skilled in the art at the time the invention was made would have found it obvious to modify Kruri-Yakub method by forming a coating having a thickness of 500 angstroms because Ting discloses that thin nitride/coating will minimize the stress and deleterious effects upon device performance (see abstract)

Allowable Subject Matter

7. Claims 36-38 allowed. The reason for allowance of claim 36 has been stated in paragraph 1 above

Claims 6-8, 24-26 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Regarding claim 6, the cited prior art of record fails to disclose or suggest a method for fabricating micromachine device comprises a step of bonding the third layer to the second layer, wherein the coating on the third layer is effective to prevent the coated portion from bonding with the second layer, in combination with the rest of the steps of claim 6

Regarding claim 8, the cited prior art of record fails to disclose or suggest a method for fabricating micromachine device comprises a step of thinning the first portion of the first layer to reduce the thickness thereof such that when the coating material is applied to the portion in step c), an upper surface of the coating is substantially flush with an adjacent upper surface of the first layer, in combination with the rest of the steps of claim 8

Regarding claim 24, the cited prior art of record fails to disclose or suggest a method for fabricating micromachine device comprises a step of bonding the third layer to the first layer, wherein the coating on the third layer is effective to prevent the movable microvalve portion of the first layer from bonding with the coated portion of the third layer while an uncoated portion of the third layer bonds to the stationary portion of the first layer, in combination with the rest of the steps of claim 24.

Regarding claim 26, the cited prior art of record fails to disclose or suggest a method for fabricating micromachine device comprises a step of thinning the first portion of the second layer to reduce the thickness thereof such that when the coating material is applied to the portion in step b), an upper surface of the coating is substantially flush

with an adjacent surface of the second layer, in combination with the rest of the steps of claim 26

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAN VINH whose telephone number is (571)272-1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lan Vinh/
Primary Examiner, Art Unit 1792